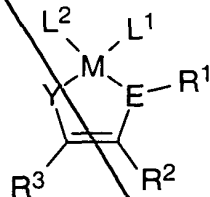


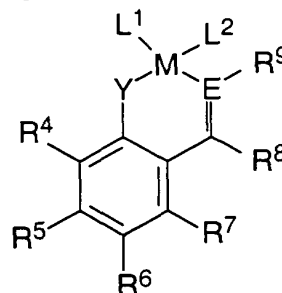
Claims

1. Process for the production of aqueous polymer dispersions by the reaction of one or more olefinically unsaturated compounds [olefin(s)] in aqueous medium in the presence of

a) a complex compound of the general formula Ia and/or Ib



Ia



Ib

in which the substituents and indices have the following meaning:

- M a transition metal of groups 7 to 10 of the periodic system of the elements,
- L¹ phosphanes (R¹⁶)_xPH_{3-x} or amines (R¹⁶)_xNH_{3-x} having identical or different substituents R¹⁶, ethers (R¹⁶)₂O, H₂O, alcohols (R¹⁶)OH, pyridine, pyridine derivatives of the formula C₅H_{5-x}(R¹⁶)_xN, CO, C₁-C₁₂ alkyl nitriles, C₆-C₁₄ aryl nitriles or ethylenically unsaturated double-bonded systems, x standing for an integer between 0 and 3,
- L² halide ions, amide ions (R¹⁶)_hNH_{2-h}, h standing for an integer between 0 and 2, and furthermore C₁-C₆ alkyl anions, allyl anions, benzyl anions or aryl anions,
- wherein L¹ and L² can be linked to one another by means of one or more covalent bonds,
- E nitrogen,
- Y oxygen, sulfur, N-R¹⁰ or P-R¹⁰,

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- R^1 hydrogen, C_1 - C_{12} alkyl groups, C_7 - C_{13} aralkyl substituents or C_6 - C_{14} aryl groups,
- R^2, R^3 independently of one another
- 5 hydrogen,
 C_1 - C_{12} alkyl, wherein the alkyl groups can be branched or unbranched,
 C_1 - C_{12} alkyl, singly or multiply substituted by identical or different C_1 - C_{12} alkyl groups,
- 10 halogens, C_1 - C_{12} alkoxy groups or C_1 - C_{12} thio-ether groups,
 C_7 - C_{13} aralkyl,
 C_3 - C_{12} cycloalkyl,
 C_3 - C_{12} cycloalkyl, singly or multiply substituted
- 15 by identical or different C_1 - C_{12} alkyl groups,
halogens, C_1 - C_{12} alkoxy groups or C_1 - C_{12} thio-ether groups,
 C_6 - C_{14} aryl,
- 20 C_6 - C_{14} aryl, identically or differently substituted by one or more C_1 - C_{12} alkyl groups, halogens, singly or multiply halogenated C_1 - C_{12} alkyl groups, C_1 - C_{12} alkoxy groups, silyloxy groups $OSiR^{11}R^{12}R^{13}$, amino groups $NR^{14}R^{15}$ or C_1 - C_{12} thio-ether groups,
- 25 C_1 - C_{12} alkoxy groups,
silyloxy groups $OSiR^{11}R^{12}R^{13}$,
halogens or
amino groups $NR^{14}R^{15}$,
- 30 wherein the substituents R^2 and R^3 can form a saturated or unsaturated 5- to 8-membered ring with one another,
- R^4 to R^7 independently of one another
- 35 hydrogen,
 C_1 - C_{12} alkyl, wherein the alkyl groups can be branched or unbranched,
 C_1 - C_{12} alkyl, singly or multiply substituted by identical or different C_1 - C_{12} alkyl groups,
- 40 halogens, C_1 - C_{12} alkoxy groups or C_1 - C_{12} thio-ether groups,
 C_7 - C_{13} aralkyl,
 C_3 - C_{12} cycloalkyl,
 C_3 - C_{12} cycloalkyl, singly or multiply substituted
- 45 by identical or different C_1 - C_{12} alkyl groups,
halogens, C_1 - C_{12} alkoxy groups or C_1 - C_{12} thio-ether groups,
 C_6 - C_{14} aryl,

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- 5 C₆-C₁₄ aryl, identically or differently substituted by one or more C₁-C₁₂ alkyl groups, halogens, singly or multiply halogenated C₁-C₁₂ alkyl groups, C₁-C₁₂ alkoxy groups, silyloxy groups OSiR¹¹R¹²R¹³, amino groups NR¹⁴R¹⁵ or C₁-C₁₂ thioether groups,
- 10 C₁-C₁₂ alkoxy groups, silyloxy groups OSiR¹¹R¹²R¹³, halogens, NO₂ groups or amino groups NR¹⁴R¹⁵, wherein pairs of neighboring substituents R⁴ to R⁷ can form a saturated or unsaturated 5- to 8-membered ring with one another,
- 15 R⁸, R⁹ independently of one another hydrogen, C₁-C₆ alkyl groups, C₇-C₁₃ aralkyl substituents or
- 20 C₆-C₁₄ aryl groups, optionally substituted by one or more C₁-C₁₂ alkyl groups, halogens, singly or multiply halogenated C₁-C₁₂ alkyl groups, C₁-C₁₂ alkoxy groups, silyloxy groups OSiR¹¹R¹²R¹³, amino groups NR¹⁴R¹⁵ or C₁-C₁₂ thioether groups,
- 25 R¹⁰ to R¹⁵ independently of one another hydrogen, C₁-C₂₀ alkyl groups, which on their part may be substituted by O(C₁-C₆ alkyl) or N(C₁-C₆ alkyl)₂ groups,
- 30 C₃-C₁₂ cycloalkyl groups, C₇-C₁₃ aralkyl substituents or C₆-C₁₄ aryl groups,
- 35 R¹⁶ hydrogen, C₁-C₂₀ alkyl groups, which for their part may be substituted by O(C₁-C₆ alkyl) or N(C₁-C₆ alkyl)₂ groups, C₃-C₁₂ cycloalkyl groups,
- 40 C₇-C₁₃ aralkyl substituents or C₆-C₁₄ aryl groups,
- 45 b) *Protective colloids see p. 16* dispersing agents and optionally c) organic solvents having low solubility in water,

- 5 d) the metal complexes a1) being dissolved in a portion or the total quantity of the olefinically unsaturated compounds and/or of the organic solvents c) having low solubility in water and
- 10 e) the portion or the total quantity of the olefinically unsaturated compounds and/or of the organic solvents c) having low solubility in water which holds the metal complexes a1) in solution being present in the aqueous medium as a dispersed phase having an average droplet diameter $\leq 1,000$ nm.
- 15 2. Process as claimed in claim 1, wherein the metal complex a1) is used in combination with an activator a2).
- 20 3. Process as claimed in any of claims 1 or 2, wherein an electrically neutral nickel complex compound is used as the complex compound of the general formula I a and/or I b.
- 25 4. Process as claimed in any of claims 2 or 3, wherein the activator a2) is an olefin complex of rhodium or nickel.
5. Process as claimed in any of claims 1 to 4, wherein ethylene is used exclusively as olefin.
- 30 6. Process as claimed in any of claims 1 to 4, wherein at least two olefins selected from the group comprising ethylene, propylene, 1-butene, 1-hexene and styrene are used.
- 35 7. Process as claimed in claim 6, wherein ethylene is used in combination with propylene, 1-butene, 1-hexene or styrene.
8. Process as claimed in any of claims 1 to 7, wherein anionic, cationic and/or nonionic emulsifiers are employed as the dispersing agents b).
- 40 9. Process as claimed in any of claims 1 to 8, wherein aliphatic and aromatic hydrocarbons, fatty alcohols and/or fatty acid esters are used as the organic solvents c).
- 45 10. Process as claimed in any of claims 1 to 9, wherein the portion or the total quantity of the olefinically unsaturated compounds and/or of the organic solvents c) having low solubility in water which contains the metal complexes a1) in solution and which is present in the aqueous medium as a dis-

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perse phase having an average droplet diameter $\leq 1,000$ nm contains further components.

11. Aqueous polymer dispersion prepared by a process as claimed
5 in any of claims 1 to 10.

12. Use of an aqueous copolymer dispersion as claimed in claim 11
as binding agent in adhesives, sealing compounds, plastic
plasters and surface coatings.

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